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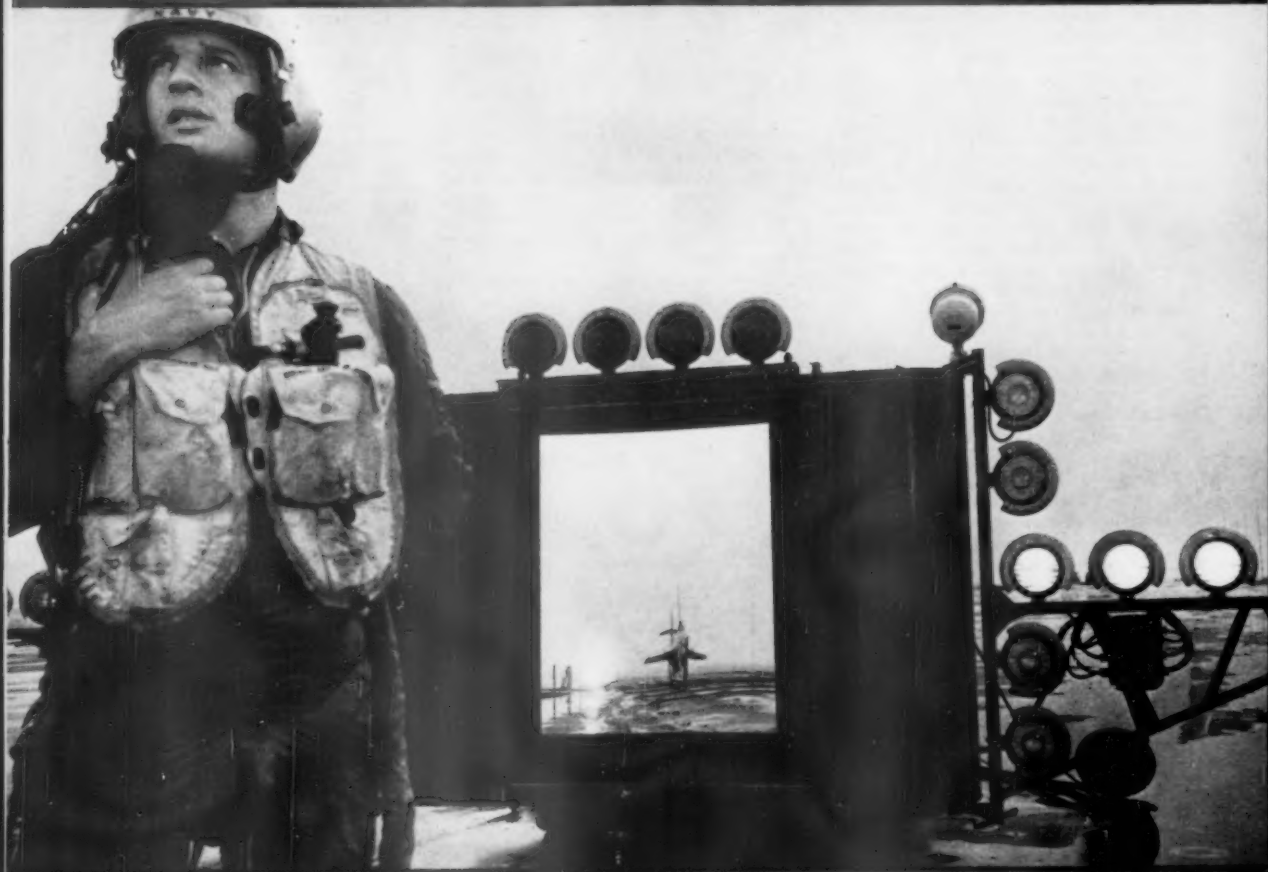
\$5.50 A YEAR

July 27, 1957

VOL. 72, No. 4 PAGES 49-65

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Mirror Landing System

See Page 58

A SCIENCE SERVICE PUBLICATION

ANIMAL PSYCHOLOGY

Test Frustrates Salmon

► FISH, LIKE HUMANS, become "frustrated" when placed under conditions of stress and strain.

This was observed when biologists of the U. S. Fish and Wildlife Service, Seattle, Wash., conducted basic research on sockeye salmon at the fish behavior laboratory of the Pacific Salmon Investigations.

Scientists also observed a "King-of-the-Mountain" routine among the salmon in which one became dominant and conquered the others for the choice shelter in a pool.

These sidelights on the salmon's psychology came about when the biologists set up a six-foot, three-chambered tank, with connecting chambers at top, with fresh water, brackish water, and salt water. Three fish were introduced into the fresh water to see if sockeye salmon smolts were ready for their journey to salt water.

The fish paid no attention to the difference in salinity of the waters, but soon took up residence, one fish to a pool. When two other fish were introduced, the established fish fought violently to guard their homes even to the extent of pulling out scales on the newcomers when they came into their two-foot chambers. The fourth and fifth fish had no place to go and exhibited signs of frustration—flicking of fins, quivering and shaking.

But when the five fish, who had been fighting furiously a few minutes previously, were placed together in a large unpartitioned pool, they quickly schooled and acted "like long lost friends."

Sockeyes normally exhibit the highest schooling behavior of any salmon.

When a block of wood about one foot square was placed on the water it provided

a shaded area in the center of the pool. All the fish took for this shelter. Shortly, however, one strong salmon was "king" and drove all the other fish away much in the manner one hen establishes herself in a barnyard flock through the phenomenon of peck order.

The fish driven from the shade took to the unsheltered corners of the pool and shook all over, the biologists reported. They appeared to be highly excited and agitated. They were paler in color than a normal fish. These characteristics continued as long as there was this condition of stress or replacement.

The fish behavior laboratory, housed in a wooden structure adjoining the main building of the Pacific Salmon Investigations on Montlake Boulevard in Seattle, has conducted a series of studies over six months. The purpose of the research is to gain a basic understanding of fish behavior. This information will be useful in field studies which in turn are applied to the conservation and wise management of the salmon resource.

"Actually we know little of fish behavior," says H. William Newman, in charge of the behavior laboratory. "By learning the behavior characteristics of salmon fingerlings under specified laboratory conditions we hope to predict the reactions of migrants to the many different conditions met in traveling from the fresh-water stream to the ocean."

The behavior tests were conducted by Mr. Newman and Alan B. Groves of the fish behavior laboratory under the direction of Dr. Gerald B. Collins who supervises the studies.

Science News Letter, July 27, 1957

ARCHAEOLOGY

Olmec Culture Dated

► RADIOCARBON DATES of wood charcoal from La Venta, major ceremonial center of the classic phase of the Olmec culture, in the state of Tabasco, Mexico, indicate the La Venta site may be more than 1,500 years older than archaeologists have supposed.

La Venta is approximately 373 air-line miles southeast of Mexico City and about 12 miles inland from the Gulf of Mexico. With its highly developed stone monumental art and elaborate jade figurines and ornaments, it has usually been regarded, especially by archaeologists in the United States, as corresponding in time to the earlier part of the classic period of Lowland Maya cultural development. This period is usually considered to be from 300 A.D. to 900 A.D.

Now the new radiocarbon dates show that the La Venta center is much older than that. Instead of having been constructed and used about 1,000 years ago,

the date is now given as from 800 B.C. to 400 B.C. or from 2,700 to 2,300 years ago.

The 1955 excavations at the La Venta site were carried out north of the great pyramid, principally in the column-enclosed ceremonial court, known to archaeologists as "Complex A". This underwent three major successive alterations following its original construction.

No carbon samples for dating were obtained from the last two construction phases. Five samples were collected, however, from the time of the original construction. One of these dates back to 1,154 B.C. with a possible error of 300 years.

One sample came from the second construction phase and was dated at 804 B.C.

Other samples came from the lower part of a four-foot-thick layer of wind-blown sand and represent a time after the final alterations were completed.

Taken all together, and using conservative figures, the radiocarbon dating of the sam-

ples indicate that Complex A was constructed and used during the four centuries 800 to 400 B.C.

The new dates are reported in *Science* (July 12) by Drs. Philip Drucker, Robert F. Heizer and Robert J. Squier of the Smithsonian Institution in Washington, and the University of California at Berkeley, Calif.

Science News Letter, July 27, 1957

ETYMOLOGY

Ancient Peoples Had No Name for "Weeds"

► A GARDENER in ancient Egypt was lucky—the word "weed" did not even exist in his language.

He may have pulled up a senmit plant or burned castor plants for fuel but the Egyptian never had a collective word for such plants.

Actually most of the plants we now think of as weeds were then believed to be useful, whether for eating, looking at—or poisoning. Each plant had its own individual name. About the nearest the ancient Egyptians, Greeks and Romans came to our word "weeds" were expressions meaning "non-useful herbs." Contemporary French and Italian words still keep this old meaning when they call weeds "plantes nuisibles" or "malerba."

Often the name of one outstandingly useless plant became synonymous for weed. The Greek "tares," a poisonous grass, is an example of this. Experts say now, however, that where the word appears in the Bible and has been translated to mean "weeds" we should keep the Greek word or, maybe, substitute "darnel," the name of a poisonous grass of cereal crops with which tares has been identified.

The early Roman solved the problem of having no word for the weed concept by using variations of Runcina, the name for the goddess of weeding. "Erunco herbas" described the pulling up and discarding of weeds from the Roman garden.

Our English word has a history that goes back more than 1,000 years to the Anglo-Saxon "weod." Some etymologists point out that "weod" and its derivatives may be derived from Dutch and Belgian words for woad or dye-weed.

It is believed that the earliest English work on agriculture to include our term was the use of "weede" by John Fitzherbert in his *Boke of Husbandry* which appeared in 1523. Strange as it may seem, a book entitled *Horse Hoeing Husbandry*, published in 1731, employs the modern form of "weed."

Dr. L. J. King of the Boyce Thompson Institute for Plant Research, Yonkers, N. Y., reports in *Nature* (June 29) that although weeds were "perhaps recognized individually in the ancient Near-Eastern civilizations, there is little evidence that a word or words existed for the collective term 'weed'."

We, thanks to the Germanic languages, do have a name for those ubiquitous, non-useful plants called weeds.

Science News Letter, July 27, 1957

RADIO

Saturday, August 3, 1957, 1:45-2:00 p.m., EDT.
"Adventures in Science" with Watson Davis,
director of Science Service, over the CBS Radio
Network. Check your local CBS station.

Dr. James Watt, director, National Heart
Institute, will discuss "America's Greatest
Killer."

GEOPHYSICS

Radar Bounced Off Moon Tests Satellite Radio

► THE RADIO tracking stations for the
satellites to be launched during the Interna-
tional Geophysical Year can be tested by
bouncing radar signals off the moon.

Beams from the powerful radar antenna
at the Army Signal Corps Engineering
Laboratories, Fort Monmouth, N. J., were
picked up by the Navy's Minitrack facility
at Blossom Point, Md., after being reflected
from the moon, the two services have
announced.

Purpose of the tests is to perfect a tech-
nique by which the operation of all the
satellite tracking stations in the Western
Hemisphere, planned as a line of eight
stretching from Maryland to Santiago,
Chile, can be tested as soon as they are in
operation.

The equipment was modified to operate
at 151 megacycles instead of the 108 mega-
cycles on which the satellite's radio will
operate.

Science News Letter, July 27, 1957

PUBLIC HEALTH

No Sale on Safe Cigarette

The "clean" cigarette is as controversial as the "clean"
H-bomb. Manufacturers want further proof their product causes
cancer. Smokers want a cigarette that is "safe," has "flavor."

► FILTERED CIGARETTES when they
were first introduced blocked more cancer-
causing chemicals. But they also blocked
sales.

A filter on the end of a cigarette can re-
duce the amount of nicotine and tars to
a point below the dangerous level. In
fact, it could take out 100% of these two
substances. But no one would smoke it.

The reason is simple. The cigarette would
be too hard to draw on and would reward
the smoker's efforts with little more than
hot air.

A cigarette appeared in 1952 with a
highly effective filter that knocked out a
good percentage of the cancer-suspect tars
found in smoke. But the public did not
like them, so the cigarette company had to
downgrade the filter until it was similar
to that of the other companies.

Present filters are somewhere between
15% and 30% effective in filtering out the
total nicotine and tar. This would appear
to be about the best balance between filtra-
tion and "flavor."

There is no complete agreement as to
what, if anything, is the cancer-causing
substance in cigarette smoke. Most heavily
indicted at the present is 3,4 benzpyrene,
a substance chemically termed an aromatic
polycyclic hydrocarbon, believed to be pro-
duced in the burning process. It can be
found in the soot of industrial cities, the
exhaust of internal combustion engines, in
petroleum and in the atmosphere itself.

As early as the 1930's, 3,4 benzpyrene
had been isolated from coal tar and found
to be a potent cancer-causing chemical
when applied to the skin of laboratory
animals.

Even injections of an extract of atmos-
phere, however, were able to produce skin
cancers.

Proving that this is the agent responsible
for human lung cancer is something which
no scientists have yet been able to do. Many
still question whether the 3,4 benzpyrene in
cigarettes could actually cause the cancer.
Others believe that even if it could, there
is too little present in cigarette smoke to
make a difference. (See SNL, July 20, p. 38.)



MOON BOUNCER—The Diana moon radar antenna, a development of
the Army Signal Corps Engineering Laboratories, Fort Monmouth, N. J., is
being used to calibrate equipment for the Minitrack stations in preparation
for tracking the earth satellites. It "illuminates" the moon, which means the
huge radar is hitting the moon with a very strong signal.

Tobacco Industry Waits

► THE RESEARCH directors of America's
leading tobacco companies are taking a
"wait-and-see" attitude about the possibility
of making a "clean" cigarette.

Without exception they maintain that
there is no proof whatsoever of anything
carcinogenic or cancer-causing in cigarette
smoke. Until someone can show them that
there is, there is nothing they can take out
of or put in the tobacco.

At least one company, however, the
American Tobacco Company, is making
radioactive smoke studies in anticipation
of the big day when something may be
found.

Tobacco is being broken down into all
its chemical parts which are then made
radioactive and traced through the burning
process. Dr. William R. Harlan, assistant
director of research of American Tobacco
Company, told SCIENCE SERVICE.

In this way the building blocks of all
possibly dangerous compounds can be
studied. If and when a cancer-causing sub-
stance is found, the compounds making it
up can be eliminated, he said.

The research directors or other respon-
sible officials of the leading cigarette com-
panies were queried in a telephone survey
on the possibilities of an anti-cancer ciga-
rette. This is the result: Dr. Harris Par-
mele, director of research at P. Lorillard
Company, Inc., said, "We feel sure that
if and when a carcinogen is actually found

in tobacco, there will be ways of taking it out."

Either filtration or chemical means could probably be used to remove it, he added.

All the tobacco researchers agree that 3,4 benzpyrene, one of the most heavily indicted possible carcinogens, is not worth worrying about at the present time.

Dr. Robert Du Puis, research director, Philip Morris & Company, said that there is no proof that 3,4 benzpyrene is actually in a cigarette. All the evidence has been based on interpreting the findings of analytical instruments. The interpretations are open to question themselves, he stated.

Lorillard's Dr. Parmele noted that most labs have written off 3,4 benzpyrene long ago.

Another researcher, Dr. William W. Bates, Liggett & Myers, reported that scientists have been trying to isolate 3,4 benzpyrene and prove that it is there for years, but with no success.

Making the "clean" cigarette involves increasing the combustion by some method until there is only carbon dioxide and water in the smoke. But then the things people look for in smoking would not be there, Dr. Bates said.

Dr. Kenneth Hoover, research director for the R. J. Reynolds Tobacco Company, said that the company did no research on the "health angle." Its contributions for research go to the Tobacco Industry Research Committee, New York, which allocates funds from the major companies to independent researchers in the U. S.

PUBLIC HEALTH

Label Protects Shopper

Labeling laws established by the Federal Government assist the individual to make an intelligent choice, based on facts, in buying foods, drugs and cosmetics.

► THE DAYS of the open cracker barrel in the country store are over for most Americans. Then, it was easy to inspect the wares and even sample them, but nowadays most food comes sealed up against dirt and spoilage. Even so, there is one dependable guide—the label on the package.

Labels help the purchaser get his money's worth and protect his family's health, but if he fails to read them, he loses that protection.

Today's food producers who obey the label laws give necessary information for intelligent buying. Here are some of the things a legitimate label tells.

First, it gives an accurate description of what is inside. When the can or package contains more than one ingredient, they are listed in the order of predominance in the food.

Secondly, exactly how much food is inside is specified since the law requires producers to specify the amount in common units of weight and measure. Also, the law requires that the stated amount has to fill the package.

"We do not want to give out any public information at this time," Dr. Hoover said.

Science News Letter, July 27, 1957

AGRICULTURE

Watch Out For Witchweed

► A SMALL, bright green weed with small flowers, usually brick red or scarlet, is on the rampage, warns the U. S. Department of Agriculture.

Witchweed is the name of the parasitic plant that is destroying crops.

Its roots attach themselves to the host plant's roots and penetrate them so that the host—corn, for example—no longer can get food and water.

Witchweed-infested corn fields were complete failures in 1956. Crops of sugarcane, sorghum, many grasses, including crabgrass, and some sedges and broadleaved plants have been attacked.

The danger of the weed spreading and attacking crops throughout the nation is so serious the Department of Agriculture has issued a warning asking farmers to notify their county agricultural agents if witchweed is found or suspected.

Farmers are especially asked not to move machinery root crops, hay or transplant crops from infested to uninfested land. Witchweed can be spread by the movement of soil—even in the cuffs of pants, reports the Department.

Science News Letter, July 27, 1957

to list the ingredients but those that are listed must not be misleading.

Coal-tar hair dyes are one cosmetic that the law exempts from the provision that no cosmetic can contain a poisonous or harmful substance. If the dye does contain such a substance, the label must warn that the skin of some people sensitive to the dye may be irritated by the dye and must caution the user to make a preliminary test.

The pamphlet "Read the Label," available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for 20 cents, contains more suggestions on how the individual is able to select products by reading their labels.

Science News Letter, July 27, 1957

SCIENCE NEWS LETTER

VOL. 72 JULY 27, 1957 NO. 4

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington 6, D. C., NORTH 7-2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

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Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 3440, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283) authorized February 28, 1950. Established in mimeograph form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Manager: Fred A. Moulton, 1719 N St., N.W., Washington 6, D. C., ME. 8-2562.

SCIENCE SERVICE

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ENGINEERING

"Super-Transistor" Made

The "spacistor," the same size as the tiny transistor, may replace many electronic devices because of its speed, adaptability and ability to withstand high temperatures.

► A DISCOVERY in electronics called the "spacistor" may well revolutionize present electronics devices and techniques much like transistors did vacuum tubes five years ago, when they ushered in the "era of miniaturization" in electronics components.

The development of the device has been announced in a paper presented before a joint meeting in Boulder, Colo., of the Institute of Radio Engineers and the American Institute of Electrical Engineers.

The "spacistors," as they are called, are no larger than the tiny transistors. One type, pictured alongside an ordinary pin, can be seen to be only about "four pin-heads long and one pin-head wide."

Like vacuum tubes and transistors, the purpose of the device is to boost the power of weak electric signals, that is, to "amplify" them. The spacistor has several advantages over present electronic amplifiers:

The spacistor is not dependent on specific or special-quality semi-conductor materials, as transistors depend on high-purity silicon and germanium. Spacistors can draw upon any semi-conductor material with suitable properties, depending on the future use of the device.

The spacistors can successfully amplify electric "signals" vibrating up to ten billion times a second, 40 times the vibration frequency limit of ordinary transistors, and 10 times that of vacuum tubes.

Spacistors will operate reliably at temperatures of around 930 degrees Fahrenheit.

Transistors do not operate above about 400 degrees Fahrenheit.

Spacistors retain many transistor advantages. They are very small: operate on a fraction of the power needed to use vacuum tubes, do not need hot filaments or a "warm-up time," and resist shock.

The spacistors handle electrons the same way transistors do but faster. A transistor lets electrons "filter" very rapidly through its body. In slow motion it would be comparable to an ink drop diffusing from the top to the bottom of a glass of water. In the spacistor, however, a powerful electric field is set up across the body. Electrons "fed in" on the negative side of the field are caught up and hustled rapidly across the body. The increase in speed allows the amplification of higher frequencies than do the "slower" transistors.

The spacistor was developed after two years of research by Drs. Hermann Statz and Robert Pucel and Conrad Lanza of Raytheon Manufacturing Company, Waltham, Mass.

Among present electronic equipment expected to benefit from the discovery are the electronic devices in guided missiles and rockets, radar, communications equipment and television sets. Dr. Statz cautioned, however, that it may take three to five years more of research and development work on the spacistors before they become commercially available.

Science News Letter, July 27, 1957

METEOROLOGY

"Rainmakers" Fail on Plains

► THE PRESIDENT'S Advisory Committee on Weather Control has summarized its findings to date on the controversial question of "rainmaking."

The Committee reported to President Eisenhower that a statistical evaluation of cloud seeding projects on the West Coast, taken as a group, showed there has been an "average increase in precipitation during the seeded storms." The odds that this result is due to natural causes and not to the seeding are estimated to be extremely small. (See SNL, May 4, p. 275.)

The average increase falls somewhere between five percent and 22%, the committee found.

These results, however, apply only to mountainous regions. Evaluations of cloud seeding operations in the relatively flat lands of the Midwest and East failed to show any indications of effects from cloud seeding. Variations in rainfall amounts in

the Midwest and East are too large for any effects of cloud seeding to be detected by presently known statistical methods.

One current program, known as the Santa Barbara Project, promises to yield the kind of information on "rainmaking" that many scientists have long believed essential. Instead of seeding every suitable storm cloud, those into which the silver iodide particles are thrown will be selected on a random basis. Thus, approximately half will be seeded, the other half used as a control for comparison.

With sufficient data, this system eliminates the difficulty of determining how much rain would have fallen if there had been no seeding.

In the letter covering transmittal of the reports to President Eisenhower, the Advisory Committee's chairman, Capt. Howard T. Orville, USN (Ret.), recommended that its records and functions be turned over to

the National Science Foundation. A bill to enable the foundation to carry on a long-range program of basic and applied research in weather modification may be considered by the Senate before adjournment. (See SNL, May 25, p. 335.)

Capt. Orville is technical consultant for the Friez Instrument Division, Bendix Aviation Corporation of Baltimore, Md.

Science News Letter, July 27, 1957

FOREST PATHOLOGY

Oak Flowers May Aid In Spread of Oak Disease

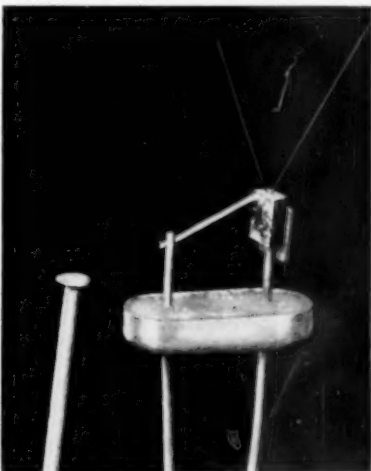
► INSECTS that feed on oak tree blossoms may be spreading the oak wilt disease, a fungus disease that is destroying many of the nation's oak trees.

Scientists of the U. S. Department of Agriculture and the Missouri Agricultural Experiment Station inoculated a group of flowering oak trees with the disease-causing fungus by placing a drop of fungi spores on the flowers' stigmas and then pricking the stigmas through the drop.

Trees that had not been inoculated but which still showed symptoms of the oak wilt disease were later examined to see if the disease could have been transmitted through roots. No evidence for this was found, the scientists reported.

The results of their study indicate that oak wilt infections can occur through injured flowers and that contaminated insects may be guilty of spreading the disease.

Science News Letter, July 27, 1957



SPACISTOR PORTRAIT—An experimental assembly of the spacistor, developed by Raytheon Manufacturing Co., Waltham, Mass., is shown alongside a straight pin. The spacistor has four leads: base, the slanted crossbar; collector, the wire directly under the semiconductor block at the right; injector, the whisker-sized wire on top left; and modulator, the whisker-sized wire on top right. The device is attached to a boat-shaped transistor mount.

SCIENTIA INTERNATIONAL

NOVAS DEL MENSE IN INTERLINGUA

► **Radio.**—Le Armea Statounitese ha un batteria que le soldato pote portar como un specie de vesta sub su jaco e que es satis forte pro le requirimentos standard de radiodifusores e -receptores portabile. Illo consiste de multiple elementos sic que es claudite in plastico de qualitate flexibile. Sub conditiones arctic le batteria-vesta ha un vita de 20 horas gratias al temperatura corporee del soldato. Sub le mesme conditiones, batterias conventional dura solmente 2 horas.

► **Physica.**—Circa 50 atomos de elemento 102 ha essite synthetisate per un gruppo international de scientistas per subijer le rar isotopo curium-244 (contribuite per le americanos) a un bombardamento de carbon-13 (contribuite per le angleses) in un cyclotron (rendite disponibile per le svedos al Instituto Nobel a Stockholm). Le angleses e americanos propone nobelium como nomine del nove elemento que esseva producte in le forma del isotopo-253. Iste isotopo ha un medie vita de 10 minutos.

► **Virologia.**—Recercas al Universitate California ha demonstrate le correctitude del theoria que virus destrue cellulas per fortior los a "committer suicidio enzymatic," i.e. a producer enzimas que ha le potentia de dissolver le pariete del cellulas mesme. In le experimentos hic reportate le cellulas esseva bacterios. Le enzima producte per illos esseva virolysin. Le discoperia es importante como guida in le lucta contra morbos viral. Il pare plausible supponer que le effectos de un virus pathogenic pote esser neutralisate per un antagonista chimic del enzima producte per cellulas que le virus ha invadite.

► **Tuberculose.**—Reporta Dr. A. J. H. Tomlinson del Servicio Laboratorial de Sanitate Publica a London que technicos de laboratorio es frequentermente exponte al risco de infection tuberculosic quando illes aperi le bottillas in que culturas diagnostic de bacterios de tuberculose es preparate. Le periculo resulta del succussion del bottillas quando le coperculos es tornate pro remover los. Dr. Tomlinson propone le remedio de coperculos de plastico que pote esser perciate per medio de un filo metallic calide.

► **Bacteriologia.**—Le cultura laboratorial de bacterios de tuberculose es accelerate remarcabilemente per le addition de dilutissime aqua de nuce de coco al medio cultural standard. Iste discoperia es reportate per un gruppo de scientistas in India. Effortios a isolar le agente specificamente responsabile pro le effecto acceleratori pare indicar que il se tracta de un polysaccharido. Le virulentia del bacterios assi producte non differe ab alteres.

► **Psychologia.**—In le jornal del Societate de Semantic General, Dr. S. I. Hayakawa discute le symbolismismo sexual del contemporanee automobile american. Su thesa central es que le satisfaction que certe homines trova in le possession e le maneamento de un machina de potentia excessive representa un forma de infantilismo que on debe comparar con le satisfaction que pueros de sette annos de etate trova in le possession de un casco de viage astral.

► **Cosmonautica.**—Satellites terrestre artificial viageante a altitudes de non plus que approximativemente 100 km es considerate como realisabile per plure expertos del Armea Statounitese. A ille altitude, le oxigeno molecular del atmosphaera es decomponite per le action del sol e appare como oxigeno atomic. Secundo allusiones facite per un representante del Armea, il pare que on ha trovate un catalysta solide

que induce le oxigeno atomic a restabli se como oxigeno molecular. Le energia liberate in iste processo essera un inexhaustibile fonte de fortia propulsiore pro satellites ionospheric que haberea un grande importantia como stationes de observation scientific.

► **Hormonologia.**—Le non infrequente facto que canarios importate a in le Statos Unite cessa cantar alcun septimanas post lor arrivata in ille pais ha parite justificar le suspicion que tal cantatores transitori es de facto femininas que ha essite virilizzate temporarimente per hormones masculin. Experimentos al Collegio Agricultural de Kansas ha demonstrate le possibilitate de facer canarios cantar per medio de hormones masculin. Le experimentos non prova necessarimente que iste forma de deception es vermente practicate in le commercio canarian.

► **Virologia.**—Biologos del Armea Statounitese reporta que illes ha injicte leve doses del virus de certe formas de encephalitis a in vesperitilones con le sorprendente effecto que (1) le concentration del virus in le vesperitilones attingeva extrememente alte niveles intra 3 dies, (2) le vesperitilones monstrava nulle reaction pathologic, e (3) le virus desapareva ab le vesperitilones intra 26 dies. Le clarification de iste mysterio va possibilmente portar con se un clarification indirecte de certe questiones de immunologia general.

► **Biochimia.**—Al novemente installate Laboratorio de Recercas Cardiovascular al Universitate California, Dr. W. F. H. M. Mommaerts conduce delicatissime investigationes in re le chimismo que accompagna le activitate del musculo del corde. Un de su experimentos require le subitissime congelation (intra 0.003 secundas) de duo pecias de vive musculo cardiac de tortuca—le un in stato de reposo, le altere in stato de stimulation electric—e lor subsequente analyse chimic.

► **Dactyloscopia.**—Le experto dactyloscopic Murakami Keitaro de Tokio reporta que le examine de criminales presente al bombardamento atomic de Hiroshima ha demonstrate que imprantas digital remane inalterate sub le effecto de non importa qual grado de radioactivitate.

► **Rheumatologia.**—Dr. N. Rothermich de Columbus (Ohio) e Dr. S. Gifford de Boston reportava al recente Congresso International de Rheumatologia a Toronto certe resultados preliminar de un investigation statistic in re le correlation inter typos characterologic e incidentia de arthritis. Le arthritic type pare distinguer se per un alte senso de responsabilitate ethic e de justitia insinual con un forte tendentia auto-accusatori. Similamente sorprendente es le (ben documentate) assertion que alienatos es ramente arthritic.

► **Linguistica.**—Duo scientistas del Statounitese Bureau of Standards a Washington ha analysate 550 complete phrases anglese, seligite al hasardo in documentos scientific, pro determinar le frequentia de varie constructiones fundamental. Tal information es importante pro le theoria e le practica del manipulation de material verbal per computadores electronic (in le cerca de patentes, le traduction mechanic, etc.). Le 550 phrases exhibiva 335 differente structuras. Le plus frequente structura occurreva solmente 12 vices. Le investigation va esser continuata pro determinar si e in qual mesura le numero del differente structuras representate in textos anglese continua crescer con plus grande numeros de phrases examinate.

Science News Letter, July 27, 1957

GENERAL SCIENCE

Reading Interlingua

► **YOU CAN READ** Interlingua if you had no more than one semester of high school French or Spanish or Latin and flunked it. You can read and understand a great deal of it even if you had never had contact with any foreign language.

Send this page to an acquaintance abroad and tell him that he can get additional information about Interlingua from Alexander Gode, Science Service's Interlingua Division, 80 E. 11th St., New York 3, N. Y.

Science News Letter, July 27, 1957

GEOLOGY

"Recent" Means Thousands of Years Old

► **"RECENT"** to a historian may mean the last few years, but to a geologist it is a matter of 4,000 to 10,000 years.

There is discussion as to just how to designate the latest deposits in the earth's crust, the layers of soil, mud and sand laid down in the lakes, glaciers, seas or formed by wind action.

The most immediately preceding epoch, called the Pleistocene, is commonly regarded as lasting about 2,000,000 years. This is the age of glaciers, although by this criterion alone the earth is still in the Pleistocene because some glaciers still exist.

A group of U. S. Geological Survey geologists, R. B. Morrison, James Gilluly, G. M. Richmond and C. B. Hunt, discuss in the *American Journal of Science* (June) whether geologic time should extend down to the present under the name of Pleistocene, concluding that there is real need for the term "Recent" as a geological time division, even though it has existed for a much shorter time than most geologic epochs.

The Pleistocene and the Recent are two epochs of the Quaternary period in geologic nomenclature. Other names used for the Recent are the Holocene and Postglacial.

Both paleontology and archaeology supplement physical geology in subdividing Recent deposits and setting them apart from those of the Pleistocene. For instance, the mammoth and ground sloth disappeared before Recent times began.

Science News Letter, July 27, 1957

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GENERAL SCIENCE

AEC's H-Bomb Edition of Nuclear Primer Published

► THE H-BOMB edition of the Atomic Energy Commission's primer for nuclear age living has been published.

The 579-page guide to the dangers of atomic and hydrogen explosions is called "The Effects of Nuclear Weapons." Seven years ago, in June, 1950, the AEC issued its first edition called "The Effects of Atomic Weapons."

Claiming to contain all the latest information on nuclear and thermonuclear weapons that can be released within the bounds of security, the \$2.00 volume does not even admit that we do have an H-bomb.

In discussing fusion or thermonuclear reactions (H-bomb), the AEC says.

"In order to make the nuclear fusion reactions take place, temperatures of the order of a million degrees are necessary. The only known way in which such temperatures can be obtained on earth is by means of a fission explosion. Consequently, by combining a quantity of deuterium or tritium (or a mixture) with a fission bomb, it SHOULD be possible to initiate one or more of the thermonuclear fusion reactions . . ."

In the 1950 edition, fusion was not discussed.

Fallout, which was almost all conjecture in 1950, receives more serious attention in the 1957 edition, with an entire chapter devoted to it. By the same token, strontium-90 was not discussed in 1950 and now receives four and one-half pages.

The book was edited by Dr. Samuel Glasstone and "is for use in planning against possible nuclear attack."

Science News Letter, July 27, 1957

AERONAUTICS

Planes Land On Thin Ice

► THE AIR FORCE has succeeded in landing wheeled aircraft weighing more than 60 tons on Arctic sea ice little more than four feet thick, the Air Research and Development Command has announced.

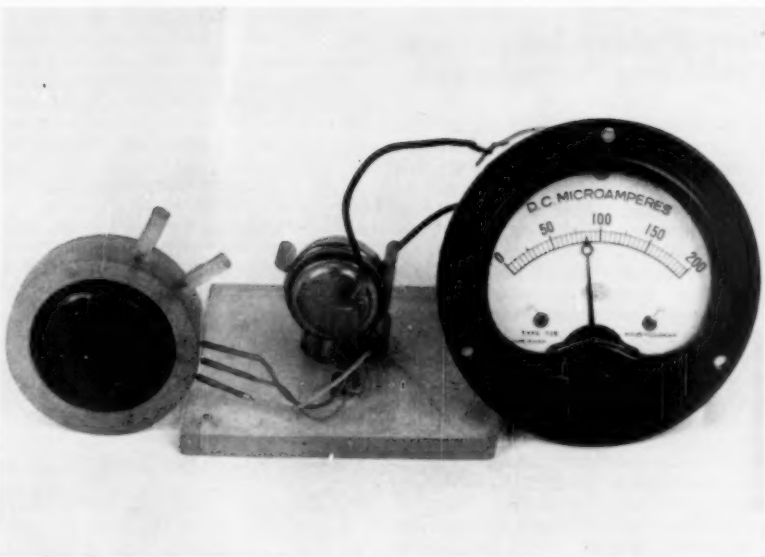
Tests conducted near Thule Air Force Base, Greenland, by ARDC's Air Force Cambridge Research Center showed jet planes and huge cargo transports could put down on Arctic sheet ice without melting or breaking it.

Using pickaxes for tools, and inner tubes for runway markers, four men from the AFRC's Terrestrial Sciences Laboratory hacked out an 11,000-foot runway for the tests in only two days.

The purpose of the research program is to compile accurate tables of the bearing strengths of both fresh and sea water ice, and to develop an airborne indicator of ice thickness and strength using seismic, impact or electromagnetic principles.

Landing, parking and taxiing tests showed that neither the great weight of the aircraft nor the heat from the jet engines caused any serious destruction of the ice.

Science News Letter, July 27, 1957



TELL-TALE SOLUTION—A puff of air on the plastic solion, developed by the U. S. Naval Ordnance Laboratory, could push iodine atoms against delicate electrodes to cause a "surge" of electricity detectable by the meter on the right. A tiny rechargeable storage battery, the size of a quarter, is seen in the center. It delivers the 0.9 volt needed to orient the iodine atoms in solution.

TECHNOLOGY

Low Heat Triggers Solion

► THE WAY electrically charged atoms move and behave in solution is being put to work in new electrochemical devices called "solion units," the U. S. Naval Ordnance Laboratory has announced.

No larger than a sugar cookie, the units are expected eventually to replace ordinary vacuum tubes and transistors in certain electronic applications that require very sensitive responses with very low power consumption.

Nelson N. Estes, NOL physicist, was in charge of much of the research done on the new devices, which work on electrochemical principles first observed in 1904.

A typical solion unit consists basically of a solution of potassium iodide, a chemical somewhat similar to common table salt, and a little iodine solution. Positive and negative electrodes are placed in the solution and a very weak "polarizing voltage" is put across the electrodes, thereby "stimulating" the positive potassium and negative iodide molecules in solution. If kept very still in the dark, at constant temperature, nothing will happen. But if light falls on a sensitive diaphragm, or if the device is jarred, or exposed to acceleration or a change in temperature, ions around the electrode are pushed nearer, causing a "surge" of electric current. It is the measurement of this tidal-wave-like surge, resulting from minute stimuli, that makes the device so sensitive and valuable.

The solion units are expected to simplify greatly several types of electronic circuits

using vacuum tubes or transistors that would otherwise be vastly complex.

Dr. Lyman C. Fisher, chief of the NOL Underwater Mechanical Engineering Department, predicts their use in:

"Rate" circuits, to get maximum accuracy and speed in operating heat controls, burglar alarms, fire alarms, furnace regulators and pressure indicators;

Small visual "exposure meters" to help protect persons working near high-intensity, low-frequency sound waves, as, for example, near jet engines. These waves are very harmful to the central nervous system;

Electrical circuits monitoring electrical or hydraulic flow, or both;

Electrical and small signal hydraulic amplifiers; and

Inertial guidance systems where changes in direction cause changes in acceleration or pressure in the solion fluids.

The devices are now restricted to low frequency use, and temperatures within the boiling and freezing point of the solution in the cell, but can be made so sensitive, that just blowing on them or holding a lighted cigarette nearby can trigger them.

NOL predicts the use in and simplification of many electronic circuits by the solion principle and units, chiefly in inertial and low frequency systems. Investigation of solion units in circuits using high frequencies is yet to come, but the basic theory and technology of the solion units are now fairly well understood.

Science News Letter, July 27, 1957

SEISMOLOGY

Test Method for Predicting Earthquakes

► A NEW METHOD that may result in a way of predicting earthquakes will be tested during the International Geophysical Year now in progress.

Using a "linear seismometer," Dr. Hugo Benioff of the California Institute of Technology will measure the accumulation of strain in the earth's crust in the Andes Mountains. Earthquakes occur when the accumulated strain is released.

Only two of the instruments exist. Dr. Benioff will make the measurements with them in sharply contrasting terrain, very high mountains and neighboring lowlands, Huancayo, Peru, and Santiago, Chile.

Results of his program will undoubtedly turn up in the *IGY Bulletin* (July), a new publication by the U. S. National Committee for IGY.

The *Bulletin* will attempt to present information in each of the disciplines of the IGY program and in such areas as the Antarctic where regional features are important.

Another study in the Andes, using dynamite charges, is expected to show how deep the earth's crust is there. In preliminary studies in the United States, scientists found the Colorado Plateau and Rocky Mountains do not have great roots reaching down some 45 miles, as would be expected from their heights. Instead the continental crust there is hardly different from that of the lowlands, about 18 miles thick.

To check this surprising finding, Dr. Howard Tatel and Dr. Merle Tuve, director of Carnegie Institution's Department of Terrestrial Magnetism, will set off a large number of dynamite charges in the Andes, then tune in on the reflected waves. This will tell them the crustal depth.

Science News Letter, July 27, 1957

PHYSIOLOGY

A-Bomb Fails to Alter Fingerprint Pattern

► THE DISTINCTIVE patterns of a man's fingerprints are not destroyed or changed even by the searing heat or terrible radioactivity of an atomic bomb.

This is demonstrated by a study of the before-and-after fingerprints of criminals and police officers who were victims of the atomic bomb explosion in the vicinity of Hiroshima, Japan. T. Dickerson Cooke, editor of *Finger Print and Identification Magazine* (June), reports the study. The study was made by Murakami Keitaro, an identification technician of the National Police Agency, Tokyo.

Two ex-convicts who had been injured in the explosion and who had been arrested again and fingerprinted later on were located. One had been about a mile and a quarter from ground zero at the time of the explosion. The other was only about 1,000 feet away. In neither criminal was there any change in the fingerprint patterns.

Two police officers were also located for

the study. One man had his left hand so injured by the radiation that three of his fingers were permanently curved inward. But, again, no change had occurred in the fingerprint ridges. The hands of the other officer were badly scarred on the backs, but the fingerprints were not changed or obliterated.

Even if the finger ridges themselves were burned badly enough to cause scarring, Mr. Keitaro concludes, the prints will show scarred impressions of the original patterns. The radiation cannot destroy the ridges or change the patterns into new or different designs.

Science News Letter, July 27, 1957

BIOLOGY

Disorder Makes Person Sleep While Talking

► ABNORMAL SLEEPERS who doze off at such embarrassing moments as when eating, talking, or taking a shower are more common than generally believed, Drs. Robert E. Yoss and David D. Daly of the Mayo Clinic, Rochester, Minn., report.

This uncontrollable urge to sleep, known as narcolepsy, is far from being rare and the victim's drowsiness may be noted by his relatives long before he is aware of it himself.

Most narcoleptics go through a varying number of almost irresistible episodes of actual sleep during the day. Between spells, they are apparently alert and many deny actually sleeping, although they do admit fighting a constant battle against sleepiness during the day.

One of their most serious problems is a tendency to fall asleep while driving. Many learn to stop their car when they get drowsy and take either a short nap by the roadside or a brisk walk.

One symptom of the disorder, known as cataplexy, is shown when the victim has short attacks in which his knees buckle and objects drop from his hands. The attacks are usually brought on by some emotional crisis.

One patient could hunt only with a dog, since if a bird flew out of the brush without warning, the patient would be startled and fall helplessly to the ground. Others have had to give up fishing since a sudden strike would make them drop their poles, the physicians report.

Sleep paralysis is another symptom of narcolepsy and usually attacks the victim when he goes to sleep or awakens. The person is suddenly aware that he cannot move or cry out, yet he feels awake. One man had an attack while smoking in bed, and, although aware of the cigarette smoldering between his fingers, he could not move even when burned.

Correct diagnosis of the disorder depends mainly on the past history of the patient since laboratory examinations many times show nothing. Once recognized, however, treatment with drug stimulants can be highly effective, the authors conclude.

Their report appears in the *Proceedings of the Staff Meetings of the Mayo Clinic* (June 12).

Science News Letter, July 27, 1957

IN SCIENCE

MEDICINE

Brown Spider's Bite Needs Medical Attention

► THE "BLACK WIDOW" is not the only U. S. spider with a bite poisonous enough to require medical treatment, Drs. Curtis W. Wingo and William A. Sodeman and the late Dr. James A. Atkins, University of Missouri, Columbia, report in *Science* (July 12).

They have implicated a brown spider, similar to the one which causes the "gangrenous spot" on the skin of South Americans. The bite of the spider causes the affected area to first turn violet, then black and dry. Within a few days or a week the dead tissue sloughs off leaving a deep opening which may not heal for several weeks.

A rash resembling scarlet fever broke out all over the victim's body in a few of the cases reported in Missouri.

The spider responsible is believed to belong to the *Loxosceles* group, which includes the one responsible for the South American bites. Laboratory tests are now underway with the spiders to test their effect on animals, and early results show that they excrete a powerful venom capable of destroying tissue cells.

This particular spider, the *Loxosceles reclusus*, is probably causing the same condition in the Midwest, southern and southwestern United States that its relatives have caused in South America, the authors report.

Science News Letter, July 27, 1957

INVENTION

Recipe for Topsoil Wins U. S. Patent

► A RECIPE for making your own synthetic topsoil has received a patent.

Here is the recipe: Pulverize some igneous rock such as granite; pulverize some sedimentary rock, such as limestone; pulverize some gypsum and powder some clay. Mix two parts of the granite with two parts of the limestone, one part of the gypsum and two parts of the clay. Then mix with approximately two and one half times its weight of organic material consisting of eight parts of peat, four parts of horse manure and seven parts of sewage sludge. Place the mixture in a digester tank and ferment. To speed fermentation, a catalyzer such as potato yeast culture and hippuric acid can be added. Mix well for a few days with a worm-screw.

The synthetic topsoil is the invention of John D. Larson of Hinsdale, Ill., who won patent No. 2,797,985. He says that the soil artificially reproduced has all the essential properties, chemical, physical, biological, bacteriological and mechanical for sustaining plant life.

Science News Letter, July 27, 1957

THE FIELDS

MEDICINE

Cortisone-Like Drugs Stop Childhood Killer

► CORTISONE-LIKE drugs are now turning the tide of battle against nephrosis, the childhood killer that used to claim 50% of its victims.

A three-year study of the drugs on 30 children at the Children's Hospital of Philadelphia has shown that the adrenal steroids can cut down the death rate to 20%, Dr. Wallace W. McCrory of the hospital told SCIENCE SERVICE.

Associated with him in the research has been Dr. Milton Rapoport, also a pediatrician and kidney specialist at the hospital.

"This is the first time we have been willing to state the outlook for this disease with the present therapy," Dr. McCrory said.

Nephrosis is an acquired degenerative disease of the kidneys which occurs mostly in children. The cause is still unknown and until the steroids came into use in the early 1950's there has been little that could be done for the victims.

Now, with hormone treatment, improvement can sometimes be noticed within two weeks, although then it is still too early to tell what the future course of the disease will be, Dr. McCrory explained.

The most obvious symptom of nephrosis is tremendous swelling all over the body that takes place because of an inability to eliminate excess water.

The steroid treatment is potentially dangerous and must be carefully watched. It is usually given along with diet therapy and antibiotics.

In some cases it is necessary to keep up the steroids for a year or so to insure actual improvements, and there are cases which do not improve even with the steroids.

Science News Letter, July 27, 1957

BIOLOGY

Inbred Chickens May Double Egg Production

► A CLUE to the development of chickens that might lay twice as many eggs as today's hens has been discovered by two American poultry researchers.

Working with a strain of Rhode Island Reds, Walter Morgan and Dr. William Kohlmeier of South Dakota State College, Brookings, S. D., have found that a surprisingly high number of them have a partially developed right oviduct not found in the average hen.

Normally, as the baby hen develops in its egg, it has the potentialities for developing both the left and right ovaries and oviducts.

But nature somehow stops further growth of the organs on the right side, and almost all hens are born with only one functioning side. As a result, their egg production is

probably only half of what it could be, the scientists report.

But the Rhode Island Red strain, which has been inbred for 11 years, has frequently yielded at least a partially developed oviduct on the right.

Although this has been found before in isolated cases it now appears that the persistent right oviduct may be a hereditary factor.

No unrelated stock has been introduced to the group during the 11 years and no selection has been made for two-sided oviducts.

Whether the chickens could be further inbred to more fully develop on the right side, and thus possibly double egg production, still needs to be determined.

The scientists report their findings in *Nature* (July 13).

Science News Letter, July 27, 1957

PSYCHIATRY

General Hospitals Treat More Mental Patients

► MENTAL PATIENTS are being treated in increasing numbers in general hospitals, Dr. Charles K. Bush of the American Psychiatric Association reports.

In the United States in 1954, 584 general hospitals reported 25,011 beds in psychiatric units with a total of 264,837 admissions. These are the hospitals that admit mental patients in other than emergency situations.

About two-thirds of these psychiatric units became active in the last ten years, Dr. Bush estimates.

Before 1800 there were only two general hospitals in the United States which accepted psychiatric patients. The Philadelphia General Hospital began this service in 1732, and the Society of the New York Hospital followed in 1779.

In 1900, there was a total of 19 general hospitals with psychiatric units. In the years from 1900 to 1920, which includes World War I, 13 additional units were opened bringing the total to 32.

From 1920 to 1940—roughly the period between World War I and World War II, 98 units were opened, including 11 in Veterans Administration Hospitals and one in a Federal Government Public Health Service hospital.

From 1941 to 1945, the period of World War II, 46 units were added, including 18 in general hospitals of the Armed Services.

At the end of World War II, therefore, there was a total of 176 psychiatric units in general hospitals, or 32% of the number in 1956. Of the 584 hospitals now admitting mental patients, 223 say they put them in regular medical or surgical wards.

Many hospitals remarked that they could use many more beds for psychiatric cases, but a few reported that their psychiatric units were not paying their way because there were not enough patients.

The average length of stay was reported to be from 20 to 30 days. Per diem cost ranged up to \$45, with the majority reporting between \$15 and \$22.

Dr. Bush's study is reported in the *American Journal of Psychiatry* (June).

Science News Letter, July 27, 1957

INDUSTRY

Radioisotopes Help Weigh Red-Hot Slag

► THREE BRITISH scientists have succeeded in weighing accurately 30 tons of red-hot molten slag from an open-hearth steel furnace by a process using a radioactive isotope to measure the slag-mass indirectly.

G. R. Church, W. C. Heselwood and G. A. Nicholson of United Steel Companies, Ltd., of Great Britain, required an isotope with very specific chemical and nuclear properties. The isotope they needed would have to mix completely with the molten slag in an 80-ton to 350-ton capacity open-hearth furnace, emit measurable amounts of radiation, offer no health problems and be easily obtainable free from other radioactive impurities.

The isotope they found was barium-140 and one of its natural decay products, lanthanum-140, both giving off electrons and gamma rays, and both chemically similar to the slag components, the scientists report in *Nature* (June 22).

Mixed in with the slag-mass, composed of oxides and silicates of calcium and magnesium, the known quantity of radioisotope spread out through the melt. When a small sample of slag was drawn off, the total mass could be computed simply by the measurable dilution of the radioisotope by the slag.

To check their process, the scientists had a special run of approximately 30 tons of slag cooled, crushed and weighed by machine methods. The results showed that the isotope process had a remarkable accuracy of plus or minus one percent. Previous slag-mass estimations had been carried out by chemically analyzing samples to obtain the ratio of calcium oxide to magnesium oxide, from which total mass could be computed.

The isotope process is so safe, the scientists observe, that "it would be necessary to eat several pounds of slag" to get dangerously radioactive.

Science News Letter, July 27, 1957

ZOOLOGY

World's Rarest Youngsters Doing Well

► THE WORLD'S rarest youngsters, whooping cranes Nos. One and Two, are now two months old, stand approximately 30 inches high, almost adult-sized, and are in good health, George Douglass, superintendent of Audubon Park New Orleans, La., reports.

Regular telephone calls are made by the Audubon Park Commission to Washington to keep Government officials informed on the chicks' health, growth and general well-being.

Nos. One and Two, who are thought to be whooping crane Nos. 29 and 30 in the world's whooping crane census, are as yet unnamed. They are the celebrated offspring of Jo, for Josephine, and Crip, the only whooping cranes in the world held in captivity.

Science News Letter, July 27, 1957

ASTRONOMY

Saturn Visible in South

Along with Venus and Jupiter, which will be visible in the early evening, and Saturn, the August sky offers the opportunity to see the famous aurora borealis.

By JAMES STOKLEY

➤ **ALTHOUGH SATURN** is the only planet visible in August well into the evening, two others can be seen soon after the sun goes down.

Brightest is Venus which, at the beginning of August, sets about an hour and a half after sunset. It is so brilliant that it will be easy to locate, low in the west, if the sky is clear.

Jupiter, a little higher and farther to the south, follows about half an hour later. About a seventh as bright as Venus, Jupiter is still more brilliant than any other star or planet. On Aug. 22 Venus passes Jupiter, and they will form a brilliant pair in the sky, separated by a distance about that of the diameter of the full moon.

Saturn, about a sixth as bright as Jupiter, is low in the south in the constellation of Ophiuchus, the serpent-bearer, right above the star Antares, which is in Scorpius, the scorpion. Both star and planet are shown on the accompanying maps, which depict the sky as it appears around 10:00 p.m. your own kind of standard time—add one hour for daylight-saving time—at the beginning of August. The appearance is similar at the middle of the month an hour earlier, or two hours earlier as August comes to an end.

Five Bright Stars

Antares is one of five bright stars—that is, of the astronomer's first magnitude—visible in August evenings.

The most brilliant of these is Vega, in Lyra, the lyre, which is almost directly overhead at the hours for which the maps are prepared. Second brightest is Arcturus, in Bootes, the bear-driver, high in the west. Antares is in third place.

Glancing downwards a little from Vega, toward the eastern horizon, you will come to Cygnus, the swan. In this group one finds Deneb, fourth brightest of our August stars. The fifth is not far away. It is Altair, in Aquila, the eagle, high in the south. Altair is easy to recognize because it is attended by two fainter stars. The one below is called Alshain and the one above Tarazed; they are, respectively, of the fourth and third magnitudes.

Low in the southwest is Scorpius, in which Antares appears. The curved row of stars in this group is supposed to form the scorpion's tail, as it is pictured on the old star maps, which drew the figures around the stars. A little higher, and to the left, is Sagittarius, the archer, now in the best position of the year for northern countries.

It is hard to recognize an archer in this group but one can easily find a teapot. The handle is to the left and the spout to the right, as if its hot tea were being poured on the scorpion's tail! The six stars that make the handle and the lid also form a dipper, which is sometimes called the milk dipper, perhaps because the Milky Way passes through this part of the sky.

The other two dippers, which are much better known, are in the northern sky.

To the northwest we see the Great Dipper, the handle extending to the left, toward Arcturus. In the dipper's bowl, opposite the handle, are the "pointers," which show the direction to Polaris, the pole star, around which all the other stars seem to wheel once every day. This star is at the end of the handle of the Little Dipper, which extends upward and to the left.

Northern Lights Glow

During this summer of 1957, if the sky is dark and you are away from the glare of city lights, there is a good chance that you may see the aurora borealis, the "northern lights."

The aurora has various forms. Sometimes it is just a pale green arch, low in the northern sky. After remaining quiescent for a while, rays extending toward the zenith may develop along the upper edge. Sometimes the arcs may pulsate, or beams like those from a battery of huge searchlights may appear for a few seconds at a time.

Other times the arc with its associated rays may rise until it is nearly overhead, with the rays seeming to converge at a single point to form an auroral crown.

Or again "waves of excitation" may move rapidly upward from the northern horizon, every few seconds. Such waves light up rays, arcs and other forms, such as luminous draperies, as they go past. While yellow-

green is the most usual color seen in the aurora, many others have been observed. The draperies are often red, while pale blues and even violets have been reported by observers.

Although auroras occur in the earth's atmosphere, at heights of 60 or more miles, they are caused by the sun.

When the sun reaches its maximum of activity, which varies over a cycle of about 11 years, and sunspots are most numerous, as they are about now, it emits large quantities of fragments of atoms bearing electrical charges—some positive, some negative. These enter the earth's atmosphere, especially near the poles, where they are drawn in by the magnetic field of our planet. In some manner, not yet fully understood, the gases in the upper atmosphere are made to glow, resulting in auroras.

Auroras Reported Low

A recent report on auroras published in Great Britain suggests that they can occur as low in the atmosphere as 24 miles above the earth's surface.

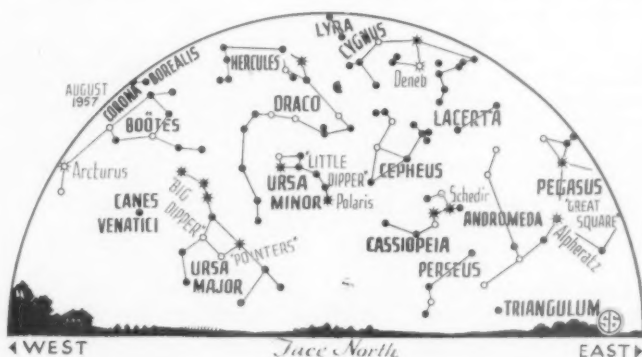
Wallace B. Murray of the Geophysical Institute, College, Alaska, found this by studying the radiation emitted by atmospheric ozone during an aurora.

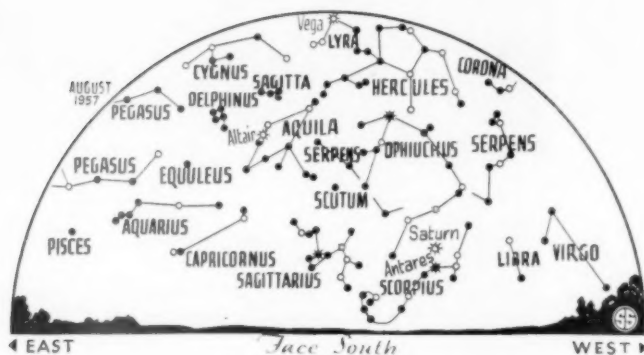
Atmospheric ozone is the triple form of life-giving oxygen that provides a blanket protecting living things from the sun's intense ultraviolet radiation. Without this blanket, life would be burned to a crisp.

Mr. Murray is measuring the infrared radiation given off at night by ozone. Small changes in its intensity are normal, but on March 26, he observed an "exceptionally large increase," amounting to 18%. This increase occurred immediately after an aurora had moved into the region of sky covered by this instrument.

The scientist believes that the increase was due either to more ozone being present or its temperature being higher. He points out in his report, which appears in *Nature* (July 20), that this relatively low-level occurrence might have some influence on the weather.

There is now going on, all over the





★ ★ ★ SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

world, the greatest concerted scientific effort ever attempted, to learn more about the earth and its environment. This is the International Geophysical Year and the earth satellite program is part of it, designed to tell more about the upper atmosphere itself.

Another important group of studies is concerned with the auroras, both of the north and south polar regions, along with other effects which the sun has on the earth. Indeed, the period from July 1, 1957, to Dec. 31, 1958, was chosen for the IGY largely because solar activity is now at maximum, and these effects are at their height, permitting observation by scientists around the world.

Celestial Time Table for August

AUG.	EST	
2	1:55 p.m.	Moon in first quarter
4	4:03 p.m.	Moon passes Saturn
10	8:08 a.m.	Full moon
12	early a.m.	Meteors visible radiating from constellation of Perseus
	9:00 a.m.	Moon farthest, distance 252,400 miles
18	11:16 a.m.	Moon in last quarter
22	10:00 a.m.	Venus passes Jupiter
25	6:32 a.m.	New moon
27	11:52 a.m.	Moon passes Jupiter
	8:16 p.m.	Moon passes Venus
31	10:33 p.m.	Moon passes Saturn
	11:34 p.m.	Moon in first quarter

Science News Letter, July 27, 1957

PUBLIC HEALTH

Sex Affects Longevity

➤ IN THE LAST 50 years, men have not only continued to die off faster than women, but the difference between their life expectancies is on the increase.

The Institute of Life Insurance, New York, reports that in 1900 the life expectancy of males of all races was 46.3 years as against 48.3 for females. In 1955, the top ages were 66.7 for the males and 73.6 for females, the difference having increased from two years to seven years.

Some experts have claimed that men just live a more stressful life these days. This explanation is contradicted by a study of men and women who had taken religious vows as Catholic Brothers and Sisters made by Francis C. Madigan, S.J., University of North Carolina, Chapel Hill.

Brothers and Sisters were chosen as the study group since they were considered to have about the same amount of cultural stress and strain. Any difference in life expectancy found between them must then be ascribed to biological differences.

"While in the general public single men are more given to dissipation than single women, a life of dissipation is equally out of the question for both sexes in religious communities," Father Madigan says.

Furthermore, Brothers are not subject to military service after entering religious life and the daily regime of both Brothers and Sisters is extremely similar.

Life records of more than 9,000 Brothers

and 32,000 Sisters were compiled covering the period 1900 to 1954. They showed that even in these matched communities the males were still being outlived by the females, even though both groups enjoyed longer life than the average population.

Another finding was the spectacular improvement in mortality of young Sisters under observation from the early to the late years of the study. This suggests that, contrary to popular belief, women may be no more resistant to infectious or contagious diseases than men, under conditions of equal stress, but that their gain in longevity is mainly due to a greater resistance to the degenerative diseases.

The finding that biological factors played by far the chief part in differentiating the death rates of these two groups is very important, Father Madigan reports.

The same factors probably are at work in the general public and the social stresses associated with the man's role in society play only a small and unimportant part in causing the difference in life span between the sexes.

If medical science can find out what these biological factors are, the growing sex difference in life expectancy may be eliminated.

The results of Father Madigan's study are contained in a report in *The Milbank Memorial Fund Quarterly*.

Science News Letter, July 27, 1957

BIOCHEMISTRY

Blood Pressure Secrets From "Hot" Tomatoes

➤ "HOT" TOMATOES may furnish a clue to certain problems related to high blood pressure.

Dr. Irving Zabin, physiological chemist at the University of California at Los Angeles Medical School, is using radioactive tomatoes, the garden variety, to study certain chemical structures similar to those found in cholesterol. Cholesterol is the fatty substance found in the body thought by some scientists to be related to high blood pressure.

The center of interest is the substance that makes tomatoes red, a carotenoid pigment. This substance contains a multiple of a five-carbon-atom structure, which is also found in cholesterol.

Dr. Zabin is currently tracing the formation of the tomato red pigment.

Compounds containing radioactive carbon are injected into tiny holes drilled in green tomatoes, and the holes are sealed with paraffin. When the tomato ripens, that is when the carotenoid red replaces the chlorophyll green, the red pigment is extracted. It is then analyzed to see how the radioactive carbon atoms are incorporated in the chemical structure.

While these studies have no direct bearing on the treatment of high blood pressure, they are a basic step in gathering the vast amount of data necessary to understand how nature builds complex substances such as cholesterol.

Science News Letter, July 27, 1957

ENTOMOLOGY

Mosquitoes and Flies Win Unpopularity Poll

➤ MOSQUITOES and house flies share top honors in a nation-wide unpopularity poll conducted by the U. S. Department of Agriculture. About three-fourths of the 33 states reporting in the survey listed these insects among the most important household pests for 1956.

Several insects normally found out of doors have gotten into enough homes to become serious problems. Clover mites were among the top ten household pests in 11 states; boxelder bugs in five and earwigs in five states.

Ants, however, seem to stick pretty much to picnic grounds. Only eight states listed them as an important household insect problem.

Termites, carpet beetles and clothes moths, and cockroaches turned up among the top ten in more than half the state lists.

The survey covered all sections of the country and included insect pests affecting livestock. Number one pest in this category was the horn fly, with cattle grubs, cattle lice and stable flies as runners-up.

Science News Letter, July 27, 1957

About three in ten households in the U. S. eat less calcium and one in four less ascorbic acid than recommended.

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N. Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ABOUT EARTHQUAKES—G. A. Eiby—*Harper*, 168 p., illus., \$3.00. The author is geophysicist at the Seismological Observatory at Wellington, New Zealand and he here answers the questions commonly asked him by visitors.

ALFRED P. SLOAN FOUNDATION REPORT FOR 1955-1956—Alfred P. Sloan, Jr., president—*Alfred P. Sloan Foundation*, 163 p., illus., paper, free upon request direct to publisher, 630 Fifth Ave., New York 20, N. Y. This foundation does not itself engage in education or research activity, but it does provide support for approved projects administered by educational, scientific and charitable institutions.

ANNALS OF PHYSICS: Volume 1, Number 1, April 1957—Philip M. Morse, Ed.—*Academic*, 111 p., diagrams, monthly, \$3.00 per issue, \$22.00 for 1957. Providing a medium for original works of broad significance written so as to be understandable to all.

ASPECTS OF THE BIOLOGY OF POMATIOPSIS LAPIDARIA (SAY) (MOLLUSCA: GASTROPODA: PROSOBRANCHIA)—Dee Saunders—*Dundee—Museum of Zoology, University of Michigan*, Miscellaneous Publications No. 100, 37 p., illus., paper, \$1.00. This snail is considered a potential host of the fluke that causes schistosomiasis.

AUTOMOBILES AND MOTORCYCLES IN THE U. S. NATIONAL MUSEUM—Smith Hempstone Oliver—*Smithsonian*, 157 p., illus., paper, \$1.00. America's first automobile, built in 1805, was amphibious and designed as a steam-operated dredge to be used in the Philadelphia harbor.

CHEMISTRY CREATES A NEW WORLD—Bernard Jaffe, introduction by Glenn T. Seaborg—*Crowell*, 321 p., illus., \$4.50. To tell adults who never had a course in chemistry about some of the more remarkable achievements of the science in recent years.

THE EFFECTS OF NUCLEAR WEAPONS—Samuel Glasstone, Ed. *Govt. Printing Office*, prepared by the U. S. Department of Defense and published by the U. S. Atomic Energy Commission, 579 p., illus., paper, \$2.00. The effects of information given here are calculated for yields up to 20 megatons and the scaling laws for hypothetically extending the calculations beyond this limit are given. (See p. 55.)

ELEMENTARY SOIL AND WATER ENGINEERING—Glenn O. Schwab and others—*Wiley*, 296 p., illus., \$6.25. A college-level text for those with no previous training in engineering.

GASIFICATION OF PULVERIZED COAL IN SUSPENSION—C. G. von Fredersdorff, E. J. Pyrcioch and E. S. Pettyjohn—*Institute of Gas Technology*, Sponsored by the Gas Production Research Committee of the American Gas Association, 71 p., illus., paper, \$5.00. Reviewing the methods for producing a satisfactory natural gas substitute.

AN INTRODUCTION TO AUTOMATIC DIGITAL COMPUTERS—R. K. Livesley—*Cambridge University Press*, 53 p., illus., \$1.75. To help engineers and others to judge whether the electronic brain is suitable for use in their own tedious numerical work.

JOHN AND WILLIAM BARTRAM'S AMERICA: Selections from the Writings of the Philadelphia Naturalists—Edited with an introduction by Helen Gere Cruickshank, foreword by B. Bartram Cadbury—*Devin-Adair*, 418 p., illus., with drawings by Francis Lee Jacques, \$5.00. In letters and diary notations, you can here learn of early America through the eyes of naturalists.

1957 MEDICAL PROGRESS: A Review of Medical Advances During 1956—Morris Fishbein—*Blakiston*, 367 p., \$6.00. One of the outstanding

achievements of the year was the continued development and use of the tranquilizers.

READING THE LANDSCAPE: An Adventure in Ecology—May Theilgaard Watts—*Macmillan*, 230 p., illus., \$4.75. A charming book that will make your travels more interesting and your stays at home more instructive.

SOME ASPECTS OF THE CHEMISTRY AND TOXIC ACTION OF ORGANIC COMPOUNDS CONTAINING PHOSPHORUS AND FLUORINE—Bernard Charles Saunders with foreword by Sir Alexander Todd—*Cambridge University Press*, 231 p., illus., \$6.00. Besides their use in biological warfare, these compounds are useful to biologists in the investigation of enzyme systems and to physicians in the treatment of glaucoma and other illnesses.

TEACHERS OF CHILDREN WHO ARE MENTALLY RETARDED: A Report Based on Findings From the Study: Qualification and Preparation of Teachers of Exceptional Children—Romaine P. Mackie, Harold M. Williams and Lloyd M. Dunn with others—*Govt. Printing Office*, Office of Education Bulletin 1957, No. 3, 97 p., illus., paper, 45 cents.

WATER FLUORIDATION: FACTS, NOT MYTHS—Louis I. Dublin—*Public Affairs Committee*, Public Affairs Pamphlet No. 251, 28 p., illus., paper, 25 cents. Telling why this "most effective and least costly preventive dental health measure available" is so bitterly opposed by some people.

WILLIAM HARVEY: His Life and Times, His Discoveries, His Methods—Louis Chauvois with foreword by Sir Zachary Cope—*Philosophical Library*, 271 p., illus., \$7.50. In addition to his great and original discoveries in medicine, William Harvey showed the correct place of experiment in scientific advance.

Science News Letter, July 27, 1957

ANIMAL PSYCHOLOGY

A Full Stomach Stops Weaned Puppy's Eating

► **WHEN A PUPPY** stops eating it is because his stomach is stretched to the limit, not because he has tired of gulping the food down.

In this the weaned puppy differs from the nursing puppy. Drs. W. T. James and T. F. Gilbert of the University of Georgia, Athens, observe in *Psychological Reports* (June). Dr. James had previously found that when food is injected by tube directly into the stomach of the nursing puppy, he goes right on sucking.

Sucking is a reflex, the investigators explain. The nursing puppy goes right on sucking until he stops because of reflex fatigue or because he goes to sleep.

As soon as the puppy is weaned, however, the stomach takes over control of the animal's intake of food.

Seven mongrel puppies were used in the experiment. On one day the puppies were allowed to eat until they could eat no more. Then, after an interval of from two to five minutes they were offered food again. Every one of the puppies who had eaten to capacity refused the second helping.

On alternate days, instead of letting the puppies eat from a pan, milk and strained

Purina Dog Chow were injected directly into the stomach. The amount was always more than the puppy ate the day before. The stomach was filled until food ran out the mouth. Again the puppies refused a second feeding from the pan.

At the beginning of the experiment, it took only 40 grams to fill the stomach, but after 16 days about 300 grams was injected before the stomach was filled.

Science News Letter, July 27, 1957

TECHNOLOGY

Mirror Landing System Designed to Save Lives

See Front Cover

► **ONE "MEATBALL"** is all U. S. Navy pilots will want aboard aircraft carriers, providing the "meatball" is in the right place.

The "meatball" is the key to the Navy's mirror landing system. Evolved during a nine-year period and incorporating developments made by the British who first used the system, it will become standard operating gear on all Navy carriers.

The system promises to cut pilot accidents by more than one-third and save taxpayers approximately \$20,000,000 annually.

The lifesaving mirror system, developed by Libbey-Owen-Ford Glass Company, Patuxent River, Md., works like this:

A curved mirror about four feet by four feet is mounted on the port side of the ship in an automatic stabilizing frame that compensates for the roll of the carrier. Four bright lights are beamed into the mirror from an aft position, forming a "meatball," as shown in the lower left of the large mirror in the photograph on the cover of this week's *SCIENCE NEWS LETTER*.

The "meatball" is reflected to the pilot of an approaching aircraft. If the pilot is in the optical glide beam provided by the "meatball" the spot will be centered between a row of stationary green "datum" lights. If he is too high, the "meatball" will move up. If too low, it will move down.

The new system gives a pilot 20 seconds to position his craft correctly. When waved aboard under the old system by a landing signal officer, the pilot had only three to four seconds.

Science News Letter, July 27, 1957

FOOD TECHNOLOGY

Glaze Protects Fish During Freezer Storage

► **A GLUCOSE** salt brine that greatly improves looks and flavor of frozen fish has been developed by the U. S. Branch of Commercial Fisheries, a part of the Fish and Wildlife Service.

Fish frozen in the refrigerated brine acquire a lasting crack-free glaze that protects them against drying or discoloration, report fisheries scientists. The glucose based glaze apparently prevents loss of moisture from the fish and keeps oxygen from getting at it.

Science News Letter, July 27, 1957

PUBLIC SAFETY

Give Air Safety Measures

The strength of the human body is an important factor in airplane crash-survival, a factor design engineers must consider in improving air travel safety.

► A HUMAN BEING can survive plane crashes that would completely demolish present airplane fuselage structures, it was found in studies conducted by Aviation Crash Injury Research of Cornell University, Flushing, N. Y.

The human body is remarkably strong and resistant to high stresses, and can easily withstand loads of 100 to 150 times the force of gravity while lying prone, the studies indicated.

There is a growing understanding among design engineers that airplane seats, passenger tie-downs and other equipment used near passengers must be made stronger in order to protect the occupants.

In most survivable airplane crashes, there are three main reasons why persons are needlessly injured or killed. Their seat belts or seats tear loose, making them "human missiles." Poorly fastened equipment, such as fire extinguishers, rips from walls and become missiles. The fuselage crushes inward on passengers.

Four safety measures were proposed to help passengers survive plane crashes. These four proposals are:

1. Strengthening hull and floor structures to prevent crushing of passengers and to absorb the shock under survivable crash conditions, that is, when the airspeed is about 170 m.p.h. at a somewhat flat impact angle.
2. There should be strong, effective passenger tie-down to prevent occupants becoming missiles. These tie-down designs will include seatbelts, seats and their anchorages to floor and fuselage structures.
3. The passenger area must be "de-lethalized," designed so that pieces of the structure or other articles near the passengers will not inflict serious injury when struck by the occupants.
4. The passenger area should be designed so that no potential missiles could break loose to strike passengers.

Can Prevent Crash Fires

► CRASH FIRES in turbojet airplanes can be prevented, four scientists of the National Advisory Committee for Aeronautics have found.

Three actions taken simultaneously immediately after the crash will keep the fires from breaking out. The actions are to shut off the fuel flow to the engine, spray water on those surfaces hot enough to start fires and disconnect the airplane's electrical system at the battery and generator.

I. Irving Pinkel, Solomon Weiss, G. Merritt Preston and Gerard J. Pesman of the NACA's Lewis Flight Propulsion Laboratory, Cleveland, Ohio, crashed eight airplanes in their studies of the origin and

prevention of crash fires in turbojet aircraft. The six protected by the three-part "inerting" system did not catch on fire, but the two others crashed without protection caught fire. The full-scale tests were made following experiments on the engine only.

The NACA has probed into the origin of crash fires for several years and recently expanded its research into the turbojet field. The elements introduced by jets include the engine and fuel, increased fuel quantity and differences in fuel location.

The tendency for a jet engine to continue to rotate after a crash makes it probable crash-spilled fuel may be sucked into the engine, then ignited explosively there. This ignition may occur on the hot metal of the engine interior even after the jet flame is extinguished and the engine coasting to rest.

Gas flow through the engine is too fast for igniting the fuel on hot metal in contact with the main gas stream, but burning does occur on the hot surfaces away from the main gas stream.

Science News Letter, July 27, 1957

IS YOUR CHILD GIFTED?

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MEDICINE

Cancer Yields to Research

With early detection of cancer and the advances made in research, particularly in chemotherapy, scientists feel the outlook for the future in the cancer fight is optimistic.

► **CANCER** was described as being "vulnerable" and already "yielding here and there" to medical science by Dr. John R. Heller, director, National Cancer Institute, U. S. Public Health Service, Washington, D. C., in a report to doctors at the American College of Chest Physicians meeting in New York.

Better research techniques and instruments developed by cooperative effort since World War II have begun to produce important results in the cancer fight, Dr. Heller said.

Among these he listed supravoltage generators, radioisotopes, tissue culture and, most recently, an ultraviolet television camera-microscope.

The outlook for the future is optimistic. All the factors involved in organizing and carrying on cancer research have combined in producing a great sustained effort that is only beginning to reach its full stride.

The most active and promising research area is chemotherapy, the treatment of cancer with chemicals. The United States and England have produced about two dozen active chemical agents in the last few years, Dr. Heller noted.

The chemicals have been effective against about 15 types of cancer, including leukemia, Hodgkin's disease, and advanced cancers of the breast and prostate gland.

The majority of chemicals were developed within the last ten years and can be classed as cell poisons, antimetabolites, hormonal alterants and other types.

Although radiation and surgery are still the only established and accepted methods for controlling or curing cancer, the known chemical agents can temporarily alleviate the symptoms and in many cases prolong the useful life of cancer patients.

They include the nitrogen mustards, methotrexate, aminopterin, 6-mercaptopurine,

myleran, CB-1348, and azaserine, Dr. Heller reported.

Early Cancer Detection

► **IGNORANCE** and simple negligence are today's major hurdles in detecting early signs of cancer. The current problem now is to win and influence many more people, the American Cancer Society reports.

Major emphasis should be given to an educational program that can reach and motivate the 40% of the U. S. population with no more than a grammar school education, it notes in its annual report.

Statistics now show one in three, not one in four, are being saved from cancer today. The survival rate for localized cancer has come up the most but there has been moderate improvement for cases with regional involvement and a very slight improvement for cases where the original cancer has spread to distant parts of the body.

"One half of all cases of cancer can be cured with present knowledge alone if action of individuals in seeking medical attention is early enough and if the latest and best means of diagnosis and treatment can be made more generally available," the Society reported.

The report urged wider use of the uterine cell examination technique for spotting cancer of the cervix in women. The test is known to be accurate in detecting 95% to 100% of symptomless cancers. Cervical cancer kills 11,500 women annually.

The American Cancer Society raised \$27,234,612 in its 1956 campaign. During 1956 approximately \$7,800,000 was used for research grants to universities, hospitals and research institutions.

The 1956-57 budget calls for spending a total of \$28,667,096 as follows: for educa-

tion, 29%; for research, 31%; for service to the cancer patient, 23%; for fund raising, 9%; and for administration, including salaries, office expense, travel, meeting expenses, audit fees, bulletins, etc., 8%.

Science News Letter, July 27, 1957

PSYCHIATRY

Warm Fingers Indicate Patient's Inner Feeling

► **WHEN A PATIENT'S** fingers become warmer during an interview with a psychiatrist, he is avoiding the problem at hand, the Society of Biological Psychiatry meeting in Atlantic City, N. J., was told.

A study with a unique "ego-detector" test that measures the skin temperature against the reaction of the individual during psychotherapy led a research team from Boston, Mass., to conclude:

1. A drop in finger skin temperature accompanies the individual's facing of a problem in therapy.

2. A skin temperature rise is associated with avoidance of the issue.

Dr. Stanley S. Kanter, Peter D. Watson and Alberto DiMascio told the Society that in instances of depression, affection, or ego defensive functioning, the skin temperature was rising or high. Where hostility or anxiety was expressed, the skin temperature fell or remained low.

In another report of psychiatric research, the Society was told that prolonged sleep treatments of from "25 to 30 days" helped more than half the mental patients it was tried on.

An attempt was made, Dr. H. Azima of Montreal, Canada, explained, to produce a pattern of sleep as similar to the physiological sleep as possible. This was partly achieved by giving three different barbiturates, in conjunction with the tranquilizers promazine or chlorpromazine.

A total of 114 patients underwent the treatment and were followed up from six months to four years later. Of 66 who received the prolonged sleep treatment alone, 57.5% showed improvement. The other 48 received sleep and shock therapy, with 52.4% improved.

Sleep, Dr. Azima suggested, is thought to help through ego-splitting and a disorganization-reorganization sequence.

Science News Letter, July 27, 1957

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"QUOTES"

"We should like you to know that **SCIENCE NEWS LETTER** is one of the most popular magazines in our Engineering Department."

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Questions

ARCHAEOLOGY—How old do archaeologists estimate the La Venta site of the Olmec culture is? p. 50.

BIOCHEMISTRY—What chemical compound found in tomatoes is being studied because of its resemblance to cholesterol? p. 59.

ENGINEERING—At how high a temperature will the "spacistor" operate reliably? p. 53.

PUBLIC HEALTH—What substance in cigarette tobacco, believed produced during burning, has been indicated as a cause of cancer? p. 51.

Photographs: Cover, Libby-Owens-Ford Glass Co.; p. 51, Army Signal Corps Engineering Laboratories; p. 53, Raytheon Manufacturing Co.; p. 55, U. S. Naval Ordnance Laboratory; p. 64, Eastman Chemical Products, Inc.

METEOROLOGY

Report on Audrey

► THE WEATHER BUREAU does not evacuate people from areas threatened by a hurricane, the agency made clear in a preliminary report on Hurricane Audrey, the disastrous tropical storm that smashed into the Texas and Louisiana coast on June 27.

The Weather Bureau is responsible for issuing warnings of hurricanes approaching the U. S. mainland, and local offices work closely with Government and Civil Defense officials, police, Red Cross and others in advising as to precautionary measures necessary to protect life and property.

Because of the more than 450 lives lost and the extremely heavy property loss, private citizens and some law-makers have claimed the Weather Bureau did not give sufficient warning on Audrey.

A re-reading of the hurricane forecasts for the week shows this claim is not true. If the advisories and bulletins had been heeded, it is probable that many persons, particularly in the Cameron, La., area that was hit with a 10.6-foot wall of water, would not have died.

Do You Know?

A high acid level in the stomach promotes *secretin* output, which in turn inhibits gastrin and hence the gastric juices.

A quarter-inch thick layer of plastic and boron absorbs *neutrons* as effectively as eight feet of concrete in atomic reactor shields.

The world's first transportable cesium *atomic clock* uses the vibrations of cesium atoms as a source of time-keeping.

The Weather Bureau's preliminary report does not say this, of course, but lets the record speak for itself.

At 10 a.m., CST, Wednesday, June 26, some 22 hours before Audrey's center crossed the coast, the New Orleans Weather Bureau issued hurricane warnings for the entire Louisiana coast and for the Texas coast as far south as Galveston. A hurricane warning means the area will feel the storm's full effects and all precautions should be taken immediately. This advisory also warned of gales and rising tides, advising all persons in low, exposed places to move to higher ground.

Although no official reports of the highest winds were received from the areas exposed to the storm's full fury, the damage near Cameron indicated winds in excess of 100 miles an hour near Audrey's center as it passed inland.

The center, or "eye," of a hurricane rarely kills anyone. Destructive winds begin at the edge of this relatively calm eye and extend outward far in advance of the storm center. Although the high winds blow over trees and houses and tear down power lines, the greatest loss of life occurs from drowning.

As a hurricane moves forward, it often piles up huge waves that cut off or completely cover low-lying coastal areas.

This is why Weather Bureau hurricane warnings always emphasize the danger of high tides.

The preliminary report clearly shows the warnings on Audrey pointed to the high-tide danger and urged evacuation of low-lying areas.

Science News Letter, July 27, 1957

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by A. H. Russell

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⚙️ **BEAM COMPASS** the size of a half-dollar can disgorge enough linen thread to scribe circles up to 12 feet in diameter, as well as curves and spirals. Measurements can be controlled to a fraction of an inch. The turret-shaped compass can be used with pencil, ballpen or metal scribe.

Science News Letter, July 27, 1957

⚙️ **AIR COOLER** can be used in offices, shops, cars, boats and homes. The lightweight, portable electric machine has twin blowers and a built-in ice cube compartment. It measures 14 inches in length, 8 inches wide and over 10 inches high, and weighs 11 pounds.

Science News Letter, July 27, 1957

⚙️ **TAX CALCULATOR** based on 1957 tax rates is designed to save time in figuring wage deductions for a payroll. Made of a rigid plastic vinyl sheet, the tax slide rule has both withholding and F.I.C.A. tax schedules. It is available in weekly and two semi-monthly models.

Science News Letter, July 27, 1957

⚙️ **FISH CALLER** shown in the photograph, is an underwriter buzzer for the fisherman consisting of a buzzer and a replaceable flashlight battery. The fish attrac-



tor is housed in a two-part case molded of a butyrate plastic. The buzzer operates when the two halves of the case are screwed together.

Science News Letter, July 27, 1957

⚙️ **COOKING AIDS** are small triangular pieces of aluminum that are said to get oven heat where it is needed in a hurry.

Easily stuck into meats or vegetables, the metal aids pinpoint heat. One aid per one-half pound of food is recommended.

Science News Letter, July 27, 1957

⚙️ **POCKET SLIDE VIEWER** fits into the palm of the hand. Powered by two AA batteries, the viewer has a precision-ground lens. Made of aluminum, the viewer gives a double-size image.

Science News Letter, July 27, 1957

⚙️ **POWDER DISPENSER** can be used in the garden for dusting powdered chemicals, fertilizers and insecticides. Designed for small, delicate plants and trees, the dispenser has a five-inch long stainless steel nozzle. The nozzle is attached to a five-inch high glass container.

Science News Letter, July 27, 1957

⚙️ **SAND-RESISTANT PAINT** especially suited to beach houses, also resists water and heat. Based on a plastic vinyl acetate resin, the paint can be applied by roller-brush or spray. Quick-drying and resistant to foaming, the paint sustained sand-blasting tests equivalent to a hurricane force of 140 miles per hour.

Science News Letter, July 27, 1957



Nature Ramblings



By BENITA TALL

➤ IF THERE were a J. Edgar Fido, chief of the canine bureau of investigation, he would have a natural identification system for finding a misbehaving dog or returning a lost one to his home.

Just as a man has fingerprints that are one-of-a-kind, a dog has a nose print that is his and his alone.

No two pores of a dog's nose are alike. There is a difference in shape, number, sequence or distance apart, and so on. This means there is an infinite number of possible prints.

Hundreds of dogs of all ages, breeds and mixtures of breeds have been "nose-printed." Each print is different and, like a fingerprint, does not change during the dog's life.

Puppies can be nose-printed any time after birth. One method—the same used in maternity hospitals for footprinting babies—uses a special inkless pad and a sensitized noseprint card. The dog's nose is first touched with the pad, then pressed to the noseprint card. The contact immediately produces a permanent black print. The en-

Little Dog Lost



tire process takes just a few seconds, is painless and the dog is identified for life.

Tattooing is another system for identifying dogs. Owners of the so-called working hound breeds have been using it for many years. Beagles, foxhounds, setters, spaniels, sheep dogs—virtually every popular breed—have been successfully tattooed. This method provides an easily seen mark that identifies the dog and his owner.

For best results, pups should be tattooed when they are about two or three months old. Tattoo marks placed in the inside of the ear, on the flank, or on the dog's lip

will remain permanent and legible for the life of the dog. In contrast to the noseprint method, which requires comparing records of different prints, assigning the right print to the right dog, tracing the owner of the tattooed dog would be relatively simple.

Color and markings are not foolproof when it comes to identifying a lost, strayed or stolen dog. Someone else may think "Spot's" markings make him "Blackie." Spot might have his spots removed with the use of dyes, or "Blackie" might be turned into "Rusty" or "Spot."

The loss of a dog can mean a broken-hearted little child, who has lost a pal, or it can mean the loss of a companion and fellow worker to a sportsman or a rancher.

It would seem to be impossible to figure the value of a dog in dollars and cents. This is one other time when an ounce of prevention—in the shape of a dab of tattoo ink or a noseprint card—is worth a pound of cure.

Dog identification through color, tattooing and nose-printing is currently being used by the Canadian Kennel Club, reports the Gaines Dog Research Center of New York.

Science News Letter, July 27, 1957